

WHAT IS CLAIMED IS:

1. A method for the production of a panel comprising at least one layer of thermoformable plastics material having separate regions of different thickness, comprising the steps of:

- extruding a sheet of plastics material with the addition to the said material of a blowing agent, the extrusion being conducted in conditions such as to avoid the expansion of the material or to cause only a partial expansion thereof;
- heating the sheet thus obtained to a temperature such as to cause post-expansion of the material; and
- thermoforming the sheet in a thermoforming cavity of complementary shape to the desired panel so that the thermoformed panel produced has in the regions of greater thickness an expanded cellular structure where the material has a lower density than the density of the material in the regions of lesser thickness.

2. A method according to claim 1, wherein the extruded sheet is heated to allow post-expansion thereof, and in the thermo-forming stage the post-expanded sheet is subjected to compression.

3. A process according to claim 1, wherein the extruded sheet is heated in the forming cavity to cause post expansion thereof during the course of thermo-forming.

4. A method according to claim 1, wherein the extrusion stage is conducted by subjecting the material during extrusion to a temperature less than the thermal decomposition temperature of the expansion agent.

5. A process according to claim 1, wherein the blowing agent is added to the material in the extruder at an intermediate section of the extruder and maintained in the extruder for a time insufficient to cause decomposition thereof.

6. A method according to claim 1, wherein the said panel has a laminar structure comprising one or more layers of cladding coupled to one or both faces of the core layer, the said cladding layers being applied to the core layer by means of co-extrusion.

7. A process according to claim 1, wherein the blowing agent is a foaming agent, preferably selected from citric acid, bicarbonate and azodicarbonamide.

8. A method according to claim 1, wherein the said layer of thermoformable plastics material is constituted by a recycled plastics material including polymers selected from the group which consists of polyethylene, polypropylene, polyester, copolymers of ethylene and SBR rubber.

9. A method according to claim 1, wherein the said separate regions of the panel of different thickness comprise reinforcing ribs or ridges.

10. A thermoformed panel comprising at least one layer of thermoformable plastics material having separate regions of different thickness, characterised in that the regions of greater thickness are formed by an expanded cellular material having a lower density than the density of the material in the regions of lesser thickness.

TRADE SHOWS

11. A thermoformed panel according to claim 10, obtainable by means of a process according to claim 1.

12. A thermoformed panel according to claims 10 or 11, having one or more reinforcing ribs or ridges projecting from one face of the panel and wherein the other face of the panel is free from concavities complementary to the said ribs or ridges, in which the material in the regions corresponding to the ribs or ridges has an expanded cellular structure with greater porosity than the porosity of the material present in the regions of lesser thickness.

13. A thermoformed panel according to claim 10, comprising one or more layers of cladding coupled to one or both faces of the said layer of thermoformable plastics material.

14. A thermoformed panel according to claim 13, wherein the said layers of cladding are constituted by woven or non-woven fabrics.

15. A thermoformed panel according to claim 10, wherein the said core layer also has an expanded cellular structure in the regions of lesser thickness.

16. A thermoformed panel according to claim 10, constituted by a wheel arch panel.

17. A wheel arch panel comprising at least one layer of expanded thermoformable plastics material having one or more reinforcing ribs or ridges, wherein the expansion material in the regions corresponding to the reinforcing ribs or ridges has a lower density than the density of the material in the regions free from the said ribs.

TOP SECRET - DEFENCE

18. A wheel arch panel according to claim 17, wherein the inner surface of the panel, which in use is intended to face towards the wheel of the motor vehicle, is free from concavities in the regions corresponding to which, on the other face of the panel, the reinforcing ribs or ridges are present.

19. A wheel arch panel according to claim 17, including at least one layer of non-woven fabric cladding coupled to one or both faces of the panel.